

**METHODS AND COMPOSITIONS RELATING TO PHOSPHORYLATED MYOSIN  
LIGHT CHAIN 1**

**Introduction**

This application claims the benefit of priority from  
5 U.S. provisional application Serial No. ~~not yet assigned~~ 60/315,886  
filed August 29, 2001.

REO  
10/23/03

**Field of the Invention**

The present invention relates to the identification of two novel phosphorylation sites of myosin light chain 1 (MLC1). Phosphorylation of MLC1 at these sites was demonstrated to increase *in vivo* following pharmacologic preconditioning with adenosine. Monitoring MLC1 phosphorylation provides a useful means for identifying new cardiac or skeletal muscle protective agents, monitoring the extent of preconditioning of cardiac and skeletal muscle tissue, and monitoring the status of a subject with cardiac or skeletal muscle damage. Further, altering MLC1 phosphorylation serves as a means for changing contractility of skeletal and cardiac muscle tissue and for protecting skeletal and cardiac muscle tissue from damage caused by conditions and/or factors including, but not limited to, cardiomyopathies, hypertension, free radicals, ischemia, hypoxia, and ischemia/hypoxia with reperfusion.

**Background of the Invention**

25 Ischemic preconditioning (PC), a phenomenon which exists in all species examined, including humans (Cohen, M.V. and Downey, J.M. Lancet 1993 342:6; Yellon et al. Lancet 1993 342:276-277; Kloner et al. J. Am. Coll. Cardiol. 1994